

U.S. Department of Energy
Office of River Protection
P.O. Box 450, MSIN H6-60
Richland, Washington 99352

SEP 20 2012

12-HAB-0031

Ms. S. L. Leckband, Chair
Hanford Advisory Board
Enviroissues Hanford Project Office
713 Jadwin, Suite 4
Richland, Washington 99352

Dear Ms. Leckband:

HANFORD ADVISORY BOARD (HAB) JUNE 8, 2012, CONSENSUS ADVICE #258,
"SAFETY CULTURE AT THE WASTE TREATMENT AND IMMOBILIZATION PLANT"

Thank you for HAB Advice #258 regarding the safety culture at the Waste Treatment and Immobilization Plant (WTP). The U.S. Department of Energy (DOE) and the HAB agree with the necessity of a safe and effective WTP, as the cornerstone of Hanford's tank waste cleanup. A healthy safety culture is vital to the identification and resolution of issues and achieving this mission.

Below are the responses to your advice.

Advice Point #1: The Board advises DOE to augment current technical staff in order to better oversee contractor activities, and to guarantee that design and construction of all elements of the WTP are performed with a "safety first" posture. In addition, DOE should continue to utilize consultants and organizations, such as universities and national labs that can provide technical advice when needed.

Response: The Office of River Protection (ORP) is evaluating options to bring in additional expertise to augment the technical staff overseeing contractor activities. ORP understands the importance of a robust safety culture and appreciates and will consider the HAB's advice as we continue to utilize experts from government, industry, academia and the National laboratories.

Advice Point #2: The Board advises DOE that there needs to be an independent and authoritative entity to drive nuclear safety as the overriding priority at the WTP. The Board recognizes that this function could be accomplished by the DNFSB.

Response: DOE continues to benefit from several technical oversight entities, in addition to its own comprehensive nuclear safety efforts, both locally and from headquarters staff. Beyond the Defense Nuclear Facilities Safety Board (DNFSB), ORP routinely interacts with the DOE Office

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of Inspector General, the DOE Office of Health, Safety, and Security (HSS), and the Government Accountability Office, as well as the State of Washington Department of Ecology.

Advice Point #3: The Board advises DOE to again assemble an independent and highly technically qualified review team to:

- Conduct a full systems analysis of the project, and review design and process issues.
- Identify and propose resolutions for technical issues and operating strategies to process all of the waste, including alternatives for pre-treatment (i.e. reconsider black cells, pulse jet mixers) and consider alternate glass forms, such as iron phosphate glass.
- Develop and implement a sound technical and programmatic basis for operation, including the critical path and essential physical and chemical properties of the waste.

Response: The Secretary of Energy assembled a group of independent technical experts to assess the WTP black cells. This team is tasked with improving DOE's ability to detect and address any potential issues in the black cells that could arise over the duration of WTP operations. The Department understands the value of external review processes and continues to engage expert review and advice from National laboratories, industry and academia.

Advice Point #4: The Board advises DOE to require regularly scheduled, transparent, self-assessments of DOE and contractor project staff to evaluate safety and technical performance against best management practices and nuclear safety standards (10 CFR 830).

Response: DOE is currently implementing the advice given. In accordance with the requirements of 10 CFR 830 Subpart A, DOE requires that managers (both DOE and contractor) assess their management processes and identify and correct problems that hinder the organization from achieving its objectives (DOE Order 414.1D, Criterion 9). The Management Assessment process is used to identify the management systems, processes, and programs that affect performance and to make improvements. Management assessments look at the total picture:

- How well the management systems and processes meet the customer's requirements;
- compliance with standards and requirements;
- meeting the expectations for safely performing work;
- clarity of the organizational mission, goals, and objectives; and
- identifying and correcting problems that hinder the organization from achieving its objectives.

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By procedure, ORP implements the Management Assessment process annually and uses the results both to improve performance and as a contributor to ORP's annual "Integrated Safety Management System" declaration. ORP requires that management assessments be documented and entered into our record management system. Management assessments are listed on the ORP Integrated Assessment Schedule and are conducted throughout the year.

Advice Point #5: The Board advises DOE to implement a revised definition of safety culture that recognizes the critical role of design in safety. The Board suggests a definition such as:

The integrated body of specific characteristics, personnel attitudes, values and behaviors of an organization (modeled by leaders and internalized by members) involving design, construction, operations, maintenance, inspection, and management policies and activities and other factors which together ensure that problems are aggressively sought out and that all concerns or issues raised are promptly addressed in a way that maximizes worker safety, public safety, and environmental protection.

Response: ORP has adopted the definition of safety culture contained in DOE Guide 450.4-1C, "Integrated Safety Management System Guide" – a definition that applies to every DOE entity. In its normal directives review and upgrade process, DOE may decide at some point in the future to change the definition of safety culture, but until then ORP will continue to use the complex-wide approved definition. DOE has also provided very strong direction in the form of standards and orders that emphasize the crucial importance of integrate safety into design. WTP safety basis development and project design efforts are being upgraded to implement the latest requirements.

Advice Point #6: The Board advises DOE to institutionalize and enforce the following behaviors in its work to make safe performance of work the overriding priority, and to hold DOE and contractor managers and employees at all levels accountable for these behaviors:

- Demonstrate that safety is preeminent in everything, including design, design approval, safety analysis, procedure writing, procurement, construction, product quality, operations, maintenance, demolition, and remediation.
- Ensure that personal relationships with contractors, or other factors, do not result in a loss of oversight mentality by DOE staff.
- Invite a critical analysis of work through an open, honest, and transparent process.
- Identify and eliminate behaviors that undermine and prevent the reporting of concerns and issues.
- Protect those who report concerns from retaliation.
- Demonstrate that cost and schedule milestones do not artificially constrain and compromise safety. Milestones, while important in that they help drive progress, may be changed if necessary to ensure that no shortcuts to safety are made.

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- Incentivize employees for raising safety concerns and issues when they are observed; communicate actions that demonstrate accountability.
- Ensure senior management demonstrates, through active listening and communication that it respects and cares for the welfare of the employees. Validate senior management's attitude through an open, non-adversarial employee feedback process.

Response: DOE appreciates the efforts of the HAB to identify specific, important behaviors. The above behaviors are included in the safety culture associated attributes described in DOE Guide 450.4-1C, "Integrated Safety Management System Guide."

Advice Point #7: The Board advises DOE to have DOE's Office of Health, Safety and Security (DOE-HSS) frequently assess safety culture using the above behaviors to identify areas for improvement and ensure that these behaviors are institutionalized.

Response: ORP maintains frequent contact with HSS, and is planning the next WTP safety culture assessment in April 2013. HSS will participate in the ongoing ORP oversight of the BNI safety culture improvement efforts.

Advice Point #8: The Board advises that DOE establish and maintain a culture that welcomes worker input and responds in a manner that is protective of the employee and inspires trust.

Response: DOE is building a robust and enduring safety culture – and with that, a safety-conscious work environment – with secretarial policy and directives, assessments and self-assessments, DOE Headquarters visits, and training.

Advice Point #9: The Board advises DOE to meet with the Nuclear Regulatory Commission and the U.S. Naval Reactors Headquarters to learn how their safety cultures are created and safety is performed with an eye toward emulating aspects of those cultures within DOE operations, considering the most recent Defense Nuclear Facilities Safety Board (DNFSB) findings and recommendations to DOE.

Response: As part of the DOE Implementation Plan for the DNFSB Recommendation 2011-1, DOE has included as one of its Safety Culture Improvement Plan an action to "Incorporate industry best practices in the development of ORP policy, procedures, and staff and management training documents that emphasize the unique and special nature of nuclear technology and operations." Resources to be evaluated include the Nuclear Regulatory Commission "Traits of a Positive Nuclear Safety Culture," as well as industry documents describing best practices for development and maintenance of strong nuclear safety cultures.

Advice Point #10: The Board advises DOE to ensure that the Employee Concerns Program (ECP) is independent and demonstrates its intolerance of reprisal from contractors or its own personnel (see HAB Advice 255 on ECP).

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Response: In our response to HAB Advice #255, "Employee Concerns Program," the Department mentioned that we are making improvements to the program in response to recent reviews, and we have detailed a DOE manager to assist in these efforts, working with federal and contractor employees and contractor union leadership. The DOE Employee Concerns Program is independent of the project line management structure, but on an as-needed basis, line management supplies additional federal employees to assist in investigations. DOE line management continues to exercise oversight to ensure cases are investigated in a timely manner. All employee concerns that involve allegations of reprisal, as well as any potential chilling effect that may have resulted, are taken very seriously, and are rigorously investigated. Where concerns are validated, appropriate actions are taken to prevent recurrence.

Advice Point #11: The Board advises DOE to award contracts on a cost plus fixed fee basis for projects such as the WTP. If the contract is to be incentivized, awards should be made for long term projects which ensure safe construction and operations.

Response: DOE currently employs a cost-plus-award fee contract structure for the WTP project.

Advice Point #12: The Board advises DOE to communicate behavioral expectations to contractor leadership and require the contractor to assess the leadership behavior of their management.

Response: In our responses to the Independent Oversight Assessment of Nuclear Safety Culture and Management of Nuclear Safety Concerns at the Hanford Site WTP, both DOE and BNI used the Safety Culture Focus Areas and Associated Attributes (Attachment 10 to the DOE Guide 450.4-1C), "Integrated Safety Management System Guide." These are the behavioral expectations that apply across the DOE complex. As part of the DOE Implementation Plan for DNFSB Recommendation 2011-1, DOE and contractor organizations across the complex will perform safety culture self-assessments by March 2013, and these will include evaluation of leadership behavior.

Advice Point #13: The Board advises DOE to incorporate ISM safety risk assessment and mitigation analysis to examine the potential risks during future operations of the WTP. The analysis should examine, but not be limited to:

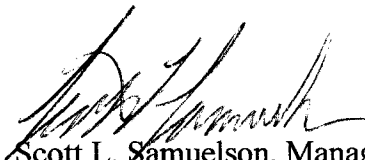
- ORP's ability to effectively treat all of Hanford's tank waste;
- The plan for resolving WTP technical issues;
- The plan for predicting and mitigating equipment failure;
- WTP maintenance risks (for example, entering black cells for repairs);
- The plan for managing potential operator error at the WTP.

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Response: Secretary of Energy Steven Chu has assembled a group of independent technical experts to assess the WTP specifically as it relates to the facility's "black cells." The review involves the plant's capability, as designed, to detect equipment failure, and to repair failed equipment inside the black cells. In addition, the DOE is working closely with BNI to develop integrated testing plans to advance resolution of several technical issues, including waste mixing erosion/corrosion. We continue to utilize expertise from across the National laboratories, industry and academia to provide input through assessments and reviews, as we advance through issue resolution.

Thank you for your continued interest and involvement in Hanford cleanup work. If you have any questions, please contact Tiffany Nguyen, DOE Richland Operations Office, at (509) 376-3361.

Sincerely,



Scott L. Samuelson, Manager
Office of River Protection

HAB:TLN

Enclosure: HAB Advice #258

cc w/encl: See page 7

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cc w/encl:

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D. C. Bryson, RL/ORP-DDFO
D. A. Faulk, EPA
T. W. Fletcher, ORP
M. A. Gilbertson, EM-10
S. Hayman, Enviroissues
J. Hedges, Ecology
W. M. Levitan, EM-10
W. M. Linzau, DNFSB
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Administrative Record
Environmental Portal
The Oregon and Washington
Congressional Delegations

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J. Merkley
R. Wyden

U.S. Senators (WA)

M. Cantwell
P. Murray

U.S. Representatives (WA)

N. Dicks
R. Hastings
J. Herrera Beutler
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June 8, 2012

Scott Samuelson, Manager
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David Huizenga,
Senior Advisor for Environmental Management
EM-1/Forestral Building
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1000 Independence Avenue
Washington, D.C. 20585

Re: Safety Culture at the Waste Treatment and Immobilization Plant

Dear Messrs. Samuelson and Huizenga,

Background:

As expressed in past advice, the safe and effective treatment of Hanford's tank waste through vitrification is a priority for the Hanford Advisory Board (HAB or Board). The cornerstone of vitrification is the Waste Treatment Plant (WTP). We all want the WTP to work safely and effectively.

This advice is in response to many reports, recommendations, investigations, action plans, and implementation plans related to the WTP that call in to question the WTP's ability to work safely and effectively. The Board read reports by the Defense Nuclear Facilities Safety Board (DNFSB), the U.S. Department of Energy's Office of Health, Safety and Security (DOE-HSS), and others who have looked into the role safety culture has played, and found a disconcerting link between the inability of employees to raise concerns and the existence of unresolved technical issues.

The first step to healing a problem is admitting there is a problem, and we commend DOE for taking the safety culture issues seriously. We're encouraged by the efforts both DOE-Headquarters (DOE-HQ) and DOE-Office of River Protection (DOE-ORP) have taken to acknowledge the safety culture concerns. DOE-ORP has developed a safety culture improvement plan that is an important first step towards meaningful reform. At a recent DNFSB hearing, David Huizenga, Senior Advisor for DOE-Environmental Management,

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HAB Consensus Advice # 258

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said that DOE is "...on the road to recovery. We are admitting we have issues. We accept the fact that we have issues that need to be dealt with and take actions to address them."

Principles of Integrated Safety Management (ISM) should have been applied to risk identification and mitigation as defined in DOE Order 450.4. Application of ISM principles requires establishing a safety-based final design before proceeding with construction of the safety related components of WTP. The Board believes that two major errors were made in terms of compliance with ISM: 1) Failure to apply principles of ISM to facility design; 2) failure to adhere to principles of behavior based on the core values of a safety culture essential to the implementation of ISM.

DOE-ORP has accepted and incorporated the definition of safety culture as articulated in the Energy Facility Contractors Group Report into DOE-ORP's Improvement Plan (April 2012): "Safety culture is an organization's values and behaviors modeled by its leaders and internalized by its members, which serve to make safe performance of work the overriding priority to protect workers, the public, and the environment."

This advice offers suggestions for how to improve the safety culture and put the WTP back on track.

Advice:

- The Board advises DOE to augment current technical staff in order to better oversee contractor activities, and to guarantee that design and construction of all elements of the WTP are performed with a "safety first" posture. In addition, DOE should continue to utilize consultants and organizations, such as universities and national labs, that can provide technical advice when needed.
- The Board advises DOE that there needs to be an independent and authoritative entity to drive nuclear safety as the overriding priority at the WTP. The Board recognizes that this function could be accomplished by the DNFSB.
- The Board advises DOE to again assemble an independent and highly technically qualified review team to:
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 - Identify and propose resolutions for technical issues and operating strategies to process all of the waste, including alternatives for pre-treatment (i.e. reconsider black cells, pulse jet mixers) and consider alternate glass forms, such as iron phosphate glass.

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- The Board advises DOE to implement a revised definition of safety culture that recognizes the critical role of design in safety. The Board suggests a definition such as:

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- The Board advises DOE to institutionalize and enforce the following behaviors in its work to make safe performance of work the overriding priority, and to hold DOE and contractor managers and employees at all levels accountable for these behaviors:
 - Demonstrate that safety is preeminent in everything, including design, design approval, safety analysis, procedure writing, procurement, construction, product quality, operations, maintenance, demolition, and remediation.
 - Ensure that personal relationships with contractors, or other factors, do not result in a loss of oversight mentality by DOE staff.
 - Invite a critical analysis of work through an open, honest, and transparent process.
 - Identify and eliminate behaviors that undermine and prevent the reporting of concerns and issues.
 - Protect those who report concerns from retaliation.
 - Demonstrate that cost and schedule milestones do not artificially constrain and compromise safety. Milestones, while important in that they help drive progress, may be changed if necessary to ensure that no shortcuts to safety are made.

- Incentivize employees for raising safety concerns and issues when they are observed; communicate actions that demonstrate accountability.
- Ensure senior management demonstrates, through active listening and communication, that it respects and cares for the welfare of the employees. Validate senior management's attitude through an open, non-adversarial employee feedback process.
- The Board advises DOE to have DOE's Office of Health, Safety and Security (DOE-HSS) frequently assess safety culture using the above behaviors to identify areas for improvement and ensure that these behaviors are institutionalized.
- The Board advises that DOE establish and maintain a culture that welcomes worker input and responds in a manner that is protective of the employee and inspires trust.
- The Board advises DOE to meet with the Nuclear Regulatory Commission and the U.S. Naval Reactors Headquarters to learn how their safety cultures are created and safety is performed with an eye toward emulating aspects of those cultures within DOE operations, considering the most recent Defense Nuclear Facilities Safety Board (DNFSB) findings and recommendations to DOE.
- The Board advises DOE to ensure that the Employee Concerns Program (ECP) is independent and demonstrates its intolerance of reprisal from contractors or its own personnel (see HAB Advice 255 on ECP).
- The Board advises DOE to award contracts on a cost plus fixed fee basis for projects such as the WTP. If the contract is to be incentivized, awards should be made for long term projects which ensure safe construction and operations.
- The Board advises DOE to communicate behavioral expectations to contractor leadership and require the contractor to assess the leadership behavior of their management.
- The Board advises DOE to incorporate ISM safety risk assessment and mitigation analysis to examine the potential risks during future operations of the WTP. The analysis should examine, but not be limited to:
 - ORP's ability to effectively treat all of Hanford's tank waste;
 - The plan for resolving WTP technical issues;
 - The plan for predicting and mitigating equipment failure;
 - WTP maintenance risks (for example, entering black cells for repairs);

- The plan for managing potential operator error at the WTP.

Sincerely,



Susan Leckband, Chair
Hanford Advisory Board

This advice does not reflect complete Board consensus - Jerry Peltier, City of West Richland, dissented.

This advice represents the Board's perspectives for this specific topic. It should not be taken out of context to extrapolate Board agreement on other subject matters.

cc: Glenn Podonsky, Chief Health, Safety and Security Office, U.S. Department of Energy Headquarters
Matt McCormick, Manager, U. S. Department of Energy, Richland Operations
Dana Bryson, Deputy Designated Official, U.S. Department of Energy, Richland Operations Office
Dennis Faulk, U. S. Environmental Protection Agency
Jane Hedges, Washington State Department of Ecology
Catherine Brennan, U.S. Department of Energy, Headquarters
The Oregon and Washington Delegations
Defense Nuclear Facilities Safety Board